

# Up To Date

## NASA IV&V Facility Educator Resource Center Newsletter

January 2010

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### NASA IV&V Facility ERC

#### Featured Event: Careers in the Corridor

Science, technology, engineering, and math (STEM) careers were highlighted for two hundred fifty high school sophomores students at I-79's Research Center on Nov. 4. These students listened to inspirational speakers such as NASA IV&V's chief engineer, Marcus Fisher, a native West Virginian, who changed his career goal from Forestry Service to NASA after spending a college internship with NASA. Another native West Virginian, astronaut Jon McBride, gave

the students an inspirational talk as he related his rise from WVU student to Space Shuttle pilot to candidate for Governor of WV.

In the Research Center's Exhibition Hall students visited displays by local companies representing STEM career opportunities. Talking with representatives of these companies about internships, the variety of jobs available with their company, and the educational preparation needed for these jobs opened many students' minds to new possibilities for the future.

Jess White, NASA IV&V Student Outreach Program Manager, coordinated this popular event.



Donna Ozburn discusses NASA IV&V student internships available for 2010.



Capt. McBride, Jess White, and students

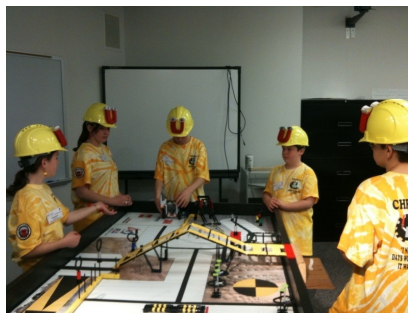


Capt. McBride inspires WV sophomores.

#### WV Lego Robotic Competition

The ERC's Program Manager, Todd Ensign, served as a judge for the Dec. 19 Fifth Annual Lego Robotic Competition at Wheeling Jesuit University's Center for Educational Technology. Teams from around West Virginia designed computer programs that allowed their robots to serve as sensor equipped vehicles that performed various transportation tasks. Students also researched travel of people, animals and information in their own communities and created

presentations showing obstacles and possible solutions. Team building skills were also emphasized.



A team demonstrating their robot design.

Several local teams received awards.

The ERC is equipped with Robot kits, each with six laptops and Lego Robotic Kits that WV teachers can use in their classrooms to teach science, technology, engineering, and math concepts. These kits are an excellent starting point for teachers wanting to participate in such competitions.

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#### Important Dates:

##### January

18, 23, 26, 30 ERC Workshops...See page 2 for details

27 Video conference on Robotics... sign up at <http://dln.nasa.gov/dln/content/webcast/>

##### February

2, 20, 22, 27 ERC Workshops...See our website or Feb. newsletter for details

24 Video conference on NASA Fit Explorers... sign up at <http://nasa.gov/dln/content/webcast>

# Upcoming Workshops: NASA IV&V Facility ERC

## January

**18 Mon. 10 am-5 pm GLOBE, Probes, GPS, & GIS** Learn to use our probes to collect data such as temperature, dissolved oxygen, conductivity, pH, barometric pressure, relative humidity, GPS, and learn how to transfer the data to a Geographical Information System (GIS) designed specifically for use in K-12 settings.

**23 Sat. 10 am-4 pm Robots and Ratios** Learn to program Lego robots, use proportional mathematics, video-based science and engineering curriculum and Lego challenges to teach math, science, and 21st century skills.

**26 Tues. 5-7 pm Aeronautics** Join the Mid-Atlantic Aerospace Complex (MAAC) Aerospace Education Program (AEP) to discover ways to introduce your students to the excitement of aeronautics and career opportunities. Learn more about training from the MAAC AEP NASA grant.

**30 Sat. 12-1:30 pm Exploring Microgravity (Webinar)** What could be more fun than floating around in microgravity? Come understand the science and mathematics of microgravity, discover related classroom activities and materials, and learn about student experiments that flown on NASA's reduced gravity aircraft.

## NASA Scientists Answer Questions Concerning the Year 2012

NASA Scientists answer several questions that are frequently asked regarding 2012.

**Question (Q): Are there any threats to the Earth in 2012? Many Internet websites say the world will end in December 2012.**

**Answer (A):** Nothing bad will happen to the Earth in 2012. Our planet has been getting along just fine for more than 4 billion years, and credible scientists worldwide know of no threat associated with 2012.

**Q: What is the origin of the prediction that the world will end in 2012?**

**A:** The story started with claims that Nibiru, a supposed planet discovered by the Sumerians, is headed toward Earth. This catastrophe was initially predicted for May 2003, but when nothing happened the doomsday date was moved forward to December 2012. Then these two fables were linked to the end of one of the cycles in the ancient Mayan calendar at the winter solstice in 2012 -- hence the predicted doomsday date of December 21, 2012.

**Q: Does the Mayan calendar end in December 2012?**

**A:** Just as the calendar you have on your kitchen wall does not cease to

exist after December 31, the Mayan calendar does not cease to exist on December 21, 2012. This date is the end of the Mayan long-count period but then -- just as your calendar begins again on January 1 -- another long-count period begins for the Mayan calendar.

**Q: Could a phenomena occur where planets align in a way that impacts Earth?**

**A:** There are no planetary alignments in the next few decades, Earth will not cross the galactic plane in 2012, and even if these alignments were to occur, their effects on the Earth would be negligible. Each December the Earth and sun align with the approximate center of the Milky Way Galaxy but that is an annual event of no consequence.

**Q: Is there a planet or brown dwarf called Nibiru or Planet X or Eris that is approaching the Earth and threatening our planet with widespread destruction?**

**A:** Nibiru and other stories about wayward planets are an Internet hoax. There is no factual basis for these claims. If Nibiru or Planet X were real and headed for an encounter with the Earth in 2012, astronomers would have been tracking it for at least the past decade, and it would

be visible by now to the naked eye. Obviously, it does not exist. Eris is real, but it is a dwarf planet similar to Pluto that will remain in the outer solar system; the closest it can come to Earth is about 4 billion miles.

**Q: What is the polar shift theory? Is it true that the earth's crust does a 180-degree rotation around the core in a matter of days if not hours?**

**A:** A reversal in the rotation of Earth is impossible. There are slow movements of the continents (for example Antarctica was near the equator hundreds of millions of years ago), but that is irrelevant to claims of reversal of the rotational poles. However, many of the disaster websites pull a bait-and-shift to fool people. They claim a relationship between the rotation and the magnetic polarity of Earth, which does change irregularly, with a magnetic reversal taking place every 400,000 years on average. As far as we know, such a magnetic reversal doesn't cause any harm to life on Earth. A magnetic reversal is very unlikely to happen in the next few millennia, anyway.

**Q: Is the Earth in danger of being hit by a meteor in 2012?**

**A:** The Earth has always been subject to Impacts by comets and asteroids, although big hits are very rare. The last big impact was 65 million years ago, and that led to the extinction of the dinosaurs. Today NASA astronomers are carrying out a survey called the Spaceguard Survey to find any large near-Earth asteroids long before they hit. We have already determined that there are no threatening asteroids as large as the one that killed the dinosaurs. All this work is done openly with the discoveries posted every day on the NASA [NEO Program Office website](#), so you can see for yourself that nothing is predicted to hit in 2012.

**Q: How do NASA scientists feel about claims of pending doomsday?**

**A:** For any claims of disaster or dramatic changes in 2012, where is the science? Where is the evidence? There is none, and for all the fictional assertions, whether they are made in books, movies, documentaries or over the Internet, we cannot change that simple fact. There is no credible evidence for any of the assertions made in support of unusual events taking place in December 2012.

## Featured STEM Career: Julie Bassler -- Robotic Scientist



**Education:** Bachelor of Science in aerospace engineering from Parks College of St. Louis University; Master of Science in physical science with emphasis on space science from the University of Houston

**NASA Center:** Marshall Space Flight Center

**Hometown:** Breese, Ill.

**Hobby:** Gardening and playing sports with my children

### **Job Description:**

The Robotic Lunar Lander Development Project is working in collaboration with the Johns Hopkins Applied Physics Laboratory to create a new generation of robotic lunar landers. The project will design a lander that will help NASA achieve its science and exploration goals on the moon's surface. The lander will be about the size of a coffee table, but it will be able to conduct big science in a very small package. The lander will be capable of landing on the near side or the far side of the moon, inside or on the edge of craters, and it will be able to withstand the long, dark lunar night. Current designs are capable of operating for a minimum of six years.

### **What do you like about your job?**

Working on the robotic lander is fascinating and rewarding because we have been able to develop a practical, low-cost, yet highly functional lander design and conduct tests on it within a really short amount of time. We have a small team, but we are very efficient -- sort of like our lander. We like to say that we are the next generation of engineers building the next generation of robotic landers. There is so much excitement about going back to the moon. One photo of our lander testing even made it to the White House! Being able to work on such a cool project has definitely been the highlight of my career so far.

### **What advice would you give to students interested in a career in robotics?**

Get involved in any competitions and projects offered through your school, NASA, local science museums or civic programs. It is incredibly important to get experience designing and building something -- no matter how small. Going through that design and build process, working with a team, and learning problem-solving skills will help you as much as anything to prepare you for a career in robotics. Also, you need to focus on science and math skills.

## **NASA Factoid: Fishermen like NASA**

Did you know that data from satellite instruments are used by fishermen to find areas where fish are most likely to be found? Fish find food in zones where cold and warm water mix. To see global patterns, visit: <http://neo.sci.gsfc.nasa.gov>

## Featured NASA Podcasts: From the "Ask an Astronomer" series

These excellent podcasts and vodcasts are ready to use in the classroom. Check them out at:

[http://coolcosmos.ipac.caltech.edu/cosmic\\_classroom/ask\\_astronomer/video](http://coolcosmos.ipac.caltech.edu/cosmic_classroom/ask_astronomer/video)

### **Why Is the Sky Blue?**

Dr. Carolyn Brinkworth fills us in on what the color of the sky has to do with finding life on distant planets.

### **Why Aren't There Any Green Stars?**

Dr. Michelle Thaller explains why some stars appear red or blue, but not green.

### **Why Isn't Pluto a Planet Any More?**

Dr. Robert Hurt explains why Pluto got... well... plutoed.

### **Why Are Solar Eclipses Only Visible in Some Parts of the World?**

Dr. Susan Stolovy answers the question of why only certain regions can see a solar eclipse.

### **Do the Stars Really Move?**

Dr. Steve Lord explains that the stars do move, but not in the way they appear to.

### **How Can We See a Black Hole?**

If no light can escape from a black hole, how do we see them? Dr. Tom Jarrett answers.

### **What Causes an Eclipse of the Moon?**

Doris Daou explains what causes eclipses.

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[pamela.casto@ivv.nasa.gov](mailto:pamela.casto@ivv.nasa.gov)**

The NASA Independent Verification and Validation Facility Educator Resource Center's goal is to serve teachers, informal educators, and preservice teachers to enable them to reach their goals. Through a grant with Fairmont State University, the NASA IV&V Facility ERC provides materials, equipment for loan, and professional development workshops both at the facility and around the state of West Virginia (scheduled upon request) for educators that reflect NASA's current research and technology.



## **NASA Update: Kepler Space Telescope Mission**

Kepler's high sensitivity to both small and large planets enabled the discovery of the exoplanets, named Kepler 4b, 5b, 6b, 7b and 8b. The discoveries were announced Monday, Jan. 4, by the members of the Kepler science team during a news briefing at the American Astronomical Society meeting in Washington.

"These observations contribute to our understanding of how planetary systems form and evolve from the gas and dust disks that give rise to both the stars and their planets," said William Borucki of NASA's Ames Research Center in Moffett Field, Calif. Borucki is the mission's science principal investigator. "The discoveries also show that our science instrument is working well. Indications are that Kepler will meet all its science goals."

Known as "hot Jupiters" because of their high masses and extreme temperatures, the new exoplanets range in size from similar to Neptune to larger than Jupiter. They have orbits ranging from 3.3 to 4.9 days. Estimated temperatures of the planets range from 2,200 to 3,000 degrees Fahrenheit, hotter than molten lava and much too hot for life as we know it. All five of the exoplanets orbit stars hotter and larger than Earth's sun.

"It's gratifying to see the first Kepler discoveries rolling off the assembly line," said Jon Morse, director of the Astrophysics Division at NASA Headquarters in Washington. "We expected Jupiter-size planets in short orbits to be the first planets Kepler could detect. It's only a matter of time before more Kepler observations lead to smaller planets with longer period orbits, coming closer and closer to the discovery of the first Earth analog."

Launched on March 6, 2009, from Cape Canaveral Air Force Station in Florida, the Kepler mission continuously and simultaneously observes more than 150,000 stars. Kepler's science instrument, or photometer, already has measured hundreds of possible planet signatures that are being analyzed.